CHAPTER III. PATTERNS OF HIGH-COST ILLNESS OVER TWO OR MORE YEARS

A critical aspect of high-cost illness is its duration. Long-term or recurrent high-cost illness poses different problems than short-term high-cost illness, and the relative frequency of short- and long-term high-cost illnesses has important implications for policy.

Importance for Policy

The importance of long-term and recurrent illness stems in part from the fact that the financial consequences of high-cost illness are somewhat cumulative for most families. The longer the duration of a high-cost illness, the more likely the family is to deplete its resources (including not only savings and other assets, but also access to credit). Longer-term illnesses therefore have more serious implications, not only for the families involved, but also for others. Taxpayers, consumers, and health-care institutions are forced to assume costs--for example, bad debts--that cannot be managed by the affected families.

Legislation aimed at providing protection against the expense of catastrophic illness should therefore take account of the actual mix of short- and long-term illness. Since most catastrophic health insurance proposals have been built around an annual accounting period (in that expenses during one calendar year are the criterion for establishing a "catastrophic" level of expense), the critical questions are how often high-cost illness lasts more than one calendar year, and how long such cases typically last.[1]

The duration of high-cost illness is also an important factor to consider in assessing the extent to which medical resources are

1. Depending on these patterns, legislation could address the problem of longer-term illness through a variety of provisions such as floating accounting periods (in which a family can use any consecutive 12 months, rather than just a calendar year, as a basis for claiming benefits), multiyear deductibles, or carryover provisions (which establish criteria for maintaining benefits temporarily after a catastrophic year). These provisions are analyzed in Appendix G.

concentrated on a relatively small number of high-cost families. If high-cost families generally do not remain above the catastrophic threshold for more than one year, then most of each year's group of high-cost families would be new. A large amount of turnover of this sort among high-cost families would indicate that, over the long term, medical resources are less concentrated on a relatively few families than is suggested by the one-year cross-section presented in the previous chapter.

Major Findings

In the non-elderly, non-poor population, families exceeding a catastrophic threshold have, on average, atypically large expenses the subsequent year, ranging up to 609 percent above the average expenses of all families (depending on the threshold used). Moreover, their average expenses remain high two years later, ranging up to 336 percent above the average expenses of all families. To the extent that data are available, the demographic characteristics of high-cost families--for example, the age of the family head and family size--contribute very little to this elevation of subsequent expenses.

One component of the subsequent high expenses of these high-cost families is that they are far more likely than the average family to exceed a catastrophic threshold in the subsequent two years. For example, only about 2 percent of all families exceed a $10,000 threshold in any one year. Of the families that do exceed this threshold, however, 18 percent will exceed the same threshold the following year, and 12 percent will exceed the same threshold two years later.

High-cost families tend to have atypically high expenditures in the previous year as well. In the aggregate, the pattern of their expenses during the year before their high-cost year is very similar to the pattern during the year after.

Despite the atypically high expenses of high-cost families in previous and subsequent years, however, the great majority of high-cost families do not exceed the threshold two years in a row. Therefore, most of each year's group of high-cost families are new. Accordingly, over the long term, medical resources are substantially less concentrated on a relatively few families than is the case in any one year. For example, fully one in four non-elderly, non-poor families have annual expenses above $3,000 at least once during a three-year period.

Plan of the Chapter

The remainder of this chapter is divided into three sections. The first considers the expenses of high-cost families in subsequent and previous years. The second section analyzes the extent of turnover among high-cost families, by assessing the probability of exceeding a catastrophic threshold at least once during a two- or three-year period. The third section provides some case histories illustrating some of the patterns that occur in illnesses lasting more than one year. Appendix G presents supplementary analyses of high-cost illnesses that do not fit neatly within calendar years. Its approach is to assess the effects of a variety of alternative provisions that could be incorporated into a catastrophic health insurance plan to handle such illnesses.

In both this chapter and Appendix G, each year's expenses were made comparable to all other years included in the analysis by inflating each year's expenses to a constant (1982) per-family average. This removed the effects of changing average medical expenditures from the results presented. This approach greatly simplifies presentation without distorting the basic comparisons that are drawn. Some of the specific numbers would have been different, however, if the effects of changing medical expenses had been included.[2]

EXPENSES OF HIGH-COST FAMILIES IN SUBSEQUENT AND PREVIOUS YEARS

This section examines two aspects of the expenses of high-cost families the year before and in the two years after the year

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2. For example, Table 5 below shows that of families that exceed a $5,000 threshold in any one year, 20 percent will exceed the same threshold the following year. This compares to the 5 percent of all families that exceed that level of expense. Had the effects of rising medical expenditures been included in the analysis, the same basic relationship--that is, the far greater than average incidence of high-cost illness in the subsequent year among families that exceeded the threshold in the baseline year--would have appeared. The incidence of high-cost illness in the subsequent year, however, would be higher (both among all families and among those exceeding the threshold in the baseline year) because of the rise in average medical expenses from one year to the next.

which their expenses exceed a catastrophic threshold. Their average expenses in those years are compared to the average expenses of all families. In addition, the proportion of high-cost families that again exceed a threshold during those years is analyzed.

Average Expenses in Subsequent Years

On average, the expenses of families that exceed a catastrophic threshold in any year decline greatly by the subsequent year but remain far higher than the average expenses of all families (see Table 4 and Figure 2). For example, families exceeding a threshold of $5,000 have average expenses of $10,300 in that year, nearly 800 percent above the average expenses of all families. In the subsequent year, their average expenses drop to about $3,500, 195 percent above the average of all families. Families exceeding $20,000 have average expenses of about $34,600 in that year, which is more than 2,800 percent above the average of all families. By the subsequent year, their average expenses drop to $8,500, which is 609 percent above the average of all families.

In the second subsequent year, the average expenses of high-cost families drop relatively little from their level in the first subsequent year (see Table 4 and Figure 2). For example, families exceeding $5,000 in the baseline year have expenses averaging about $3,500 (195 percent above the overall average) in the first subsequent year; this drops only to about $3,200 (164 percent above average) in the second subsequent year. As higher thresholds are used, the second-year drop in expenses becomes somewhat larger. For example, families exceeding $20,000 in the baseline year have expenses about 600 percent above average in the first subsequent year, but only about 340 percent above average in the second subsequent year.

The higher average subsequent expenses of high-cost families are by and large not attributable to the demographic factors about which data are available. As noted in Appendix E, the incidence of high-cost illness increases with age and is different among men and women. In addition, the incidence is markedly higher in multiperson families than in single-person families. These factors contribute little, however, to the subsequent elevation of expenses experienced by high-cost families.

TABLE 4. AVERAGE EXPENSES OF ALL FAMILIES AND OF FAMILIES EXCEEDING CATASTROPHIC THRESHOLDS, IN CATASTROPHIC AND SUBSEQUENT YEARS (Percent above average expense of all families in parentheses)

Group	Average Expense, Catastrophic Year	Average Expense, First Subsequent Year	Average Expense, Second Subsequent Year
All Families	1,182[a]	1,199[a]	1,227[a]
Families Exceeding $3,000 in Catastrophic Year	7,015 (493)	2,768 (131)	2,619 (113)
Families Exceeding $5,000 in Catastrophic Year	10,315 (773)	3,542 (195)	3,244 (164)
Families Exceeding $10,000 in Catastrophic Year	18,727 (1,484)	5,365 (347)	4,446 (262)
Families Exceeding $20,000 in Catastrophic Year	34,641 (2,831)	8,504 (609)	5,347 (336)

a. These values differ slightly from the average presented in Chapter II for technical reasons; the difference has no practical importance. These results reflect a sample of contracts active for at least three years, while to be included in the results in Chapter II, families only had to be active for one year.

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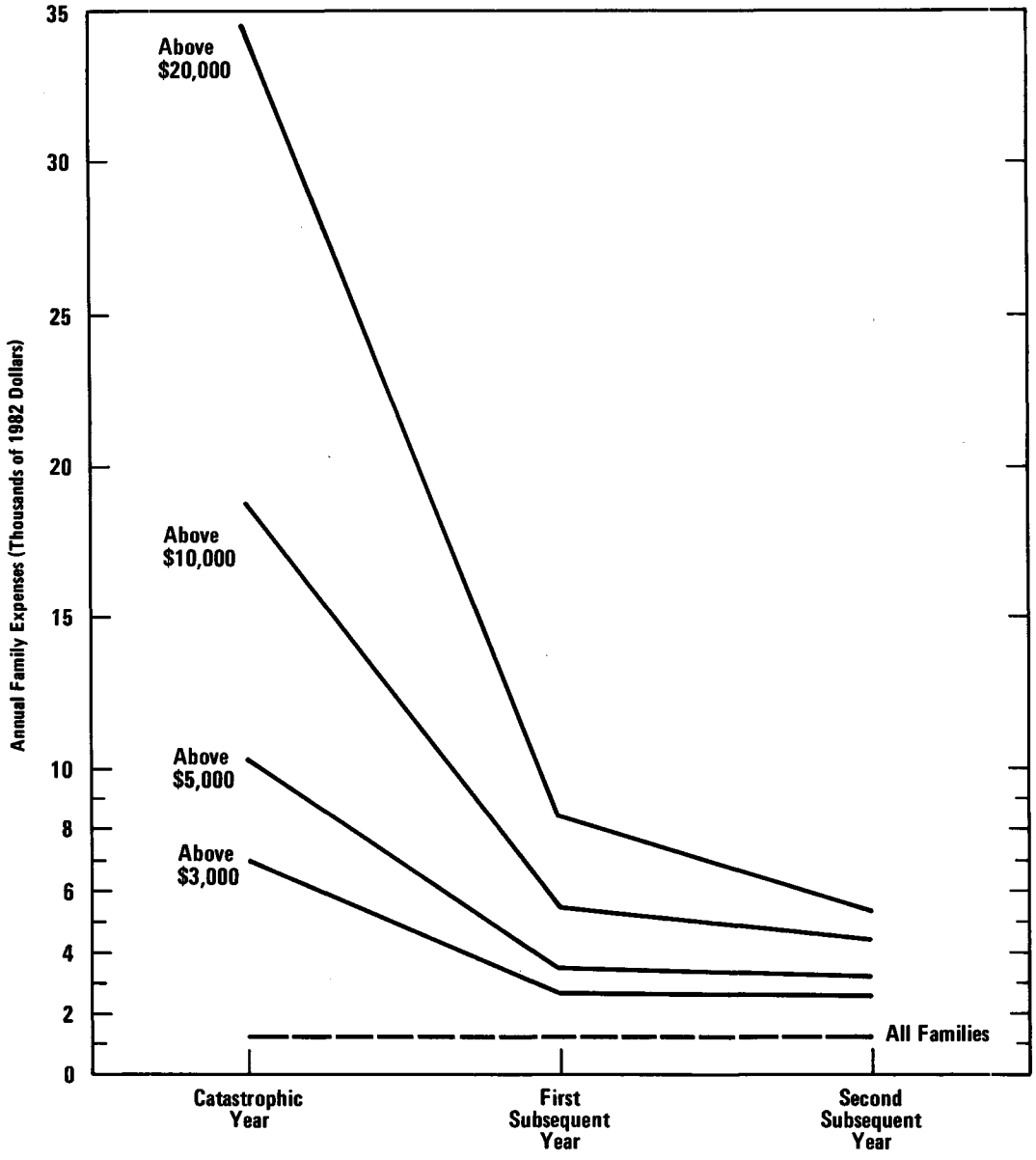
Figure 2.

Average Expenses of All Families and of Families Exceeding Catastrophic Thresholds in Catastrophic and Subsequent Years (In 1982 dollars)



Recurrence of High-Cost Illness in Subsequent Years

One aspect of this average elevation of subsequent-year expenses is that families exceeding a threshold in one year are far more likely than the average family to exceed any of the thresholds in the subsequent year (see Table 5). For example, while only 5 percent of all families exceed a threshold of $5,000 in any one year, that threshold is exceeded by 20 percent of those that exceeded $5,000 in the previous year, and over 30 percent of those that exceeded $20,000 in the previous year. Similarly, while only about 0.5 percent of all families exceed $20,000 in any one year, that threshold is exceeded by 6 percent of those families that exceeded $10,000 the previous year, and by 12 percent of those that exceeded $20,000.

The relatively high rate of recurrence of high medical expenses largely persists into the second subsequent year (see Table 6). For example, while only 2 percent of all families exceed a threshold of $10,000 in any one year, that threshold is exceeded by 12 percent of the families that exceeded the same threshold two years previously.

TABLE 5. PERCENT OF FAMILIES EXCEEDING THRESHOLDS IN FIRST SUBSEQUENT YEAR, BY LEVEL OF EXPENSE IN BASELINE YEAR

	Threshold			
	$3,000	$5,000	$10,000	$20,000
All Families[a]	11	5	2	0.5
Baseline Expenses Above $3,000	27	15	6	2
Baseline Expenses Above $5,000	31	20	9	3
Baseline Expenses Above $10,000	40	30	18	6
Baseline Expenses Above $20,000	40	32	21	12

a. These values differ slightly from those presented in Chapter II for technical reasons; the difference has no practical importance. These results reflect a sample of contracts active for at least two years. See footnote to Table 4.

TABLE 6. PERCENT OF FAMILIES EXCEEDING THRESHOLDS IN SECOND SUBSEQUENT YEAR, BY LEVEL OF EXPENSE IN BASELINE YEAR

	Threshold			
	$3,000	$5,000	$10,000	$20,000
All Families[a]	11	6	2	0.6
Baseline Expenses Above $3,000	24	14	5	2
Baseline Expenses Above $5,000	28	18	8	3
Baseline Expenses Above $10,000	36	24	12	4
Baseline Expenses Above $20,000	37	25	14	8

a. These values differ slightly from those presented in Chapter II and in Table 5 for technical reasons; the difference has no practical importance. These results reflect a sample of contracts active at least three years. See footnote to Table 4.

Expenses of High-Cost Families During the Previous Year

Families that exceed a catastrophic threshold in a given year have, on average, atypically large expenses the previous year as well. This reflects, in part, two different phenomena: chronic high-cost illness (that is, expenses exceeding a given threshold in the previous year as well as in the catastrophic year), and expenses that build up for some time before they finally exceed the threshold.

The average previous-year expenses of high-cost families are very similar to their subsequent-year expenses--that is, well below their catastrophic-year expenses but nonetheless substantially higher than the average expenses of all families (see Table 7). Indeed, when the lower thresholds are applied, the previous-year and subsequent-year expenses are virtually identical, and when

TABLE 7. AVERAGE EXPENSES OF ALL FAMILIES AND OF FAMILIES EXCEEDING CATASTROPHIC THRESHOLDS, IN CATASTROPHIC, PREVIOUS, AND SUBSEQUENT YEARS

Group	Average Expense, Catastrophic Year	Average Expense, Previous Year	Average Expense, First Subsequent Year
All Families	1,180	1,170	1,180
Families Exceeding $3,000 in Catastrophic Year	7,170	2,820	2,800
Families Exceeding $5,000 in Catastrophic Year	10,580	3,500	3,570
Families Exceeding $10,000 in Catastrophic Year	19,120	4,900	5,640
Families Exceeding $20,000 in Catastrophic Year	33,480	6,540	7,390

a. These values differ slightly from the average presented in Chapter II and from Table 4 for technical reasons; the difference has no practical importance. These results reflect two different samples of contracts active at least two years. See footnote to Table 4.

the higher thresholds are applied, the two differ by no more than 15 percent.[3]

3. Note that these tabulations exclude those who died during the period in questions. Given that families enter and leave the data base each year, this analysis could only be done meaningfully by limiting the tabulations to families for which data were available during all years in question.

One component of large average previous-year expenses of high-cost families is that such families are far more likely than the average family to exceed the threshold in the previous year. The previous-year incidence of high-cost illness is among high-cost families very nearly the same as the subsequent-year incidence shown in Table 5.

PROBABILITY OF HIGH-COST ILLNESS OVER SEVERAL YEARS

Although the proportion of families exceeding catastrophic thresholds within any one year is small, the proportion exceeding thresholds in at least one year during a several-year period is much larger. Thus, the resources devoted to high-cost illness are in fact allocated to far more families than a single year's data would suggest.

The proportion of families with expenses above $3,000 in any one year, for example, is only 11 percent, but 20 percent reach that level at least once in a two-year period, and fully one-fourth of all families exceed $3,000 at least once in a three-year period (see Table 8). If the analysis was extended to longer periods of time, a substantially larger proportion of families would be found to exceed $3,000 at least once. The effect of considering several years, rather than just one, is even more striking when higher thresholds are used to define high-cost illness (although this fact is partly obscured by rounding error in Table 8).

This pattern reflects the fact that the great majority of high-cost familes in any one year did not exceed the same threshold the previous year and will not do so the subsequent year. Although families exceeding a threshold are more likely than other families to exceed the same threshold the next year, only 12 to 27 percent do so (as was shown in Table 5). This indicates that roughly 75 to 90 percent of high-cost families in any one year are "new" cases, in that their expenses the previous year did not qualify them as high-cost.[4]

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4. To obtain precise estimates, one would need a table that displayed the previous-year incidence of high-cost illness, rather than the subsequent-year incidence shown in Table 5. As noted earlier, however, the previous-year and subsequent-year patterns are very nearly the same, so the estimates in Table 5 provide a close approximation.

TABLE 8. PERCENT OF FAMILIES WITH ANNUAL EXPENSES ABOVE CATASTROPHIC THRESHOLDS DURING PERIODS OF ONE TO THREE YEARS

	Threshold			
	$3,000	$5,000	$10,000	$20,000
During Any One Year	11	6	2	0.5
At Least Once During Two Years	20	10	3	0.8
At Least Once During Three Years	27	14	4	1.3

EXAMPLES OF EXPENSES EXTENDING MORE THAN ONE YEAR

Although high-cost families, on average, show a building up of expenses before the catastrophic year and a slow decline in expenses in subsequent years, individual patterns vary greatly. Some may have expenses mirroring the aggregate pattern--a gradual build-up to a catastrophic year, followed by a gradual decline--but many do not. The expenses of some families revert to very low levels after a catastrophic year. Other families experience a continuing build-up of expenses even after a catastrophic year. Still others have long-term high expenses but exceed a given catastrophic threshold only intermittently. Even when a family includes only one individual who alone exceeds the threshold, the expenses of two or several people can contribute substantially to its pattern.

This section describes a number of case histories taken from the data used in this report. The cases were not chosen to be typical, but rather to illustrate some of the diverse patterns that occur. All expenses in the case histories are expressed in 1982 dollars.

Intermittent Expenses Above the Threshold

Some families exceed a given catastrophic threshold intermittently because of a chronic illness that generates lower expenses in some years than in others. Some forms of cancer can generate

this pattern of expense. For example, one family in the data had this pattern because the father had skin cancer. In 1976 and 1978, the family would have exceeded a $20,000 threshold (with expenses of $29,000 and $21,000, respectively), primarily because of the father's condition. In 1977, however, his treatment was less extensive; despite one surgical admission that year, the family's expenses fell short of $9,000 and so would not have met even a $10,000 threshold.

In some other instances, families exceed a threshold intermittently because of several different illnesses. In some cases, including some in which a second illness affects the same person, the different illnesses are separated by some time. A striking case involved a five-person family with generally very low claims that exceeded a $20,000 threshold in both 1976 and 1978, the first time because of a cerebrovascular condition affecting the father, and the second time because of an injury that required the father to undergo repeated pelvic and hip surgery. In the intervening year, the family's claims were roughly $400--about one-third of the average.

More important for policy, however, are instances in which two or more illnesses affect different individuals but in which the periods during which the illnesses occur overlap to a substantial degree. Such cases would be treated very differently by catastrophic health insurance plans, depending on whether reimbursement was based on individuals' or families' expenses. For example, in some cases, an individual has a long-term illness that generates expenses that are high but below the threshold for some time after the catastrophic year. In such cases, sizable expenses from another family member may again push the family above a threshold based on family expenses in some later year. In one case of this sort, a chronically ill husband generated expenses well above a $10,000 threshold in 1976. He remained ill thereafter, and in 1978 he generated expenses of about $5,800--far above the average, but well below the threshold. That year, however, his wife generated expenses of more than $8,000 because of a heart condition, pushing the family well above the $10,000 threshold again.

Expenses Persistently Above the Threshold

Masked by the aggregate pattern of gradually declining expenses are an appreciable number of high-cost families whose expenses remain similar or increase substantially for a year or more after a catastrophic year. As noted earlier, from 12 to 27 percent of

high-cost families exceed the same threshold in the subsequent year, and from 8 to 24 percent exceed it again the year after.

Some of these families show consistent expenditures over a long period. One family in the data, for example, incurred expenses between $15,000 and $19,000 in each of the last three years of the data, most of which resulted from a blood disorder of a young child. The period of the study ended when the child was three and a half, so it is not clear how long such expenses persisted. It is possible, however, that they continued for some additional time.

In other cases, families exceed a threshold persistently for several years because of expenses that escalate as illness progresses. These cases, which are particularly relevant to the debate over the value of "heroic" care, are exemplified by the experiences of some cancer patients. For example, one of the highest-cost cases in the data was the family of a teenaged girl with lymphatic cancer. By 1974--the first year of data--the girl was already seriously ill, and expenses for her care alone amounted to about $46,000 that year. The following year her expenses increased to about $60,000. Thereafter, her expenses escalated rapidly, and she incurred nearly $90,000 in expenses in the first two and one-half months of 1976--apparently, the last two and one-half months of her life.

In some instances, families exceed a threshold two years in succession, not because of a chronic illness but rather because of two unrelated acute illnesses that follow each other closely. In general, such cases contribute proportionately less to the recurrence of high-cost illness when high thresholds are used. Even when a $20,000 threshold is used, however, some such cases arise. A particularly striking case in the data used here involved two seemingly coincidentally similar illnesses striking a husband and wife within two years. The husband suffered from ischemic heart disease (restricted blood flow to the heart muscle) throughout the study. In 1974, he was hospitalized for six days, but his expenses were not major. During 1975 and 1976, he filed no claims at all. In 1976, his wife, who had filed only minor and apparently unrelated claims previously, developed rheumatic fever. She was hospitalized for three weeks, during which she had cardiovascular surgery and amassed over $25,000 in expenses. She apparently recovered, for her claims in 1977 and 1978 were again small. In 1977, however, the husband's ischemic heart disease flared; he was hospitalized repeatedly over a seven-month period, underwent cardiovascular surgery, and accumulated $24,500 in expenses.

CHAPTER IV. TRENDS IN EXPENDITURES FOR HIGH-COST ILLNESS

This chapter analyzes the extent to which expenditures for high-cost illness grew during the period of the study (1974-1978).

Importance for Policy

Increases in expenditures for high-cost illness would have wide-reaching implications for health policy. They would drive up the costs of private or public insurance coverage of catastrophic expenses and might exacerbate the problem of uninsured "bad debts." Moreover, such increases would produce an increasing concentration of medical-care resources in high-cost care. (That is, while the total resources committed to lower-cost care would also increase, the proportion of health-care resources devoted to high-cost illness would rise.) This would have implications not only for the equity and efficiency of health-care delivery but also for a variety of policies intended to contain health-care expenditures, such as greater use of cost sharing.

Major Findings

In the non-elderly, non-poor population, high-cost illness increased steadily and rapidly over the period 1974 through 1978. For example, the proportion of families with expenses above $10,000 (in nominal dollars) increased 236 percent. This increase in high-cost illness substantially outpaced growth in median income or general prices over that period. Even after adjusting the thresholds to keep pace with rising incomes, the proportion of families exceeding the catastrophic thresholds increased 48 to 82 percent over the five-year period, depending on the threshold used to delineate high-cost illness.

Most of the increase in high-cost illness in the non-elderly, non-poor population, however, reflected an overall increase in medical expenditures rather than an especially rapid rise in expenditures for high cost illness. Although expenditures for high-cost illness did rise faster than did total medical expenses, this disproportionate growth was relatively small. For example, when families were ranked by their annual medical expenses, the top 10 percent of families accounted for 65 percent of all expenses in 1974, and 67 percent of expenses in 1978.

Since it was relative small, this disproportionate growth of high-cost illness contributed very little to the total increase in medical-care costs over the period included in the study. Had there been no disproportionate growth in high-cost illness, total medical expenditures would have grown 61 percent rather than the 66 percent observed during the five-year period.

Accordingly, high-cost illnesses contributed to the growth of medical expenditures in rough proportion to their contribution to current expenses. For example, the total expenses of families exceeding a $10,000 threshold accounted for about 30 percent of the growth in total expenditures during the period covered by the study, just as they currently account for about 30 percent of annual expenses.

Over the long term, however, the cumulative effects of the small disproportionate growth in high-cost illness could be striking. For example, if present trends continued, the 1 percent of families with the highest expenses in any one year--who accounted for 22 percent of total expenses in 1978--would account for perhaps 35 percent of total expenses by the end of the century.

WAYS OF VIEWING CHANGES IN HIGH-COST ILLNESS

Several different approaches can be used in describing changes in the extent of high-cost illness. One approach is to assess changes in the proportion of total medical expenses attributable to the families with the highest expenses. For example, families could be ranked in terms of their annual expenses, and the proportion of total expenses attributable to the top 20 percent of all families could be compared from year to year. An alternative approach is to assess changes in the proportion of families exceeding various catastrophic thresholds. In this case, the thresholds could be left constant (in nominal dollars) or could be adjusted to keep pace with any of a variety of indexes--for example, median family income or average medical expenditures.

Changes in expenditures for high-cost illness can reflect, in part, demographic trends such as changes in age distribution or family composition. The data used here do not permit an assessment of the aggregate effects of such changes in the population under consideration (the non-elderly, non-poor). Accordingly, demographic factors are held constant in the following analyses of trends in high-cost illness. It is unlikely, however, that demographic changes in the non-elderly population would produce major changes in the incidence of high-cost illness over the short

term.[1] (In the population as a whole, however, demographic changes are probably quite important, because of the growth in the elderly population.)

CHANGES IN EXPENSES ATTRIBUTABLE TO HIGH-COST FAMILIES

Over the five-year period of the study, the proportion of medical expenses attributable to high-cost families increased only slightly. When families were ranked in terms of their annual expenses, this growth was discernible only among the top 20 percent of families and was most pronounced among the families with the highest expenses (see Table 9). Even among the 1 percent of families with the highest expenses, however, the growth was quite small. In 1974, those families accounted for 20 percent of medical expenses; by 1978, their share had risen to 22 percent.

One implication of these findings is that expenditures for high-cost illness are growing only slightly faster than medical expenses in general and that disproportionate growth of high-cost illness has recently made only a minor contribution to the overall growth in medical expenditures in the groups considered. This point is discussed in more detail in the final section of this chapter.

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1. For example, the Social Security Administration estimates that from 1977 (the next-to-last year of data used here) to 1990, the 20-24, 45-54, and 55-64 year-old age groups will decline as percentages of the total population aged 20 through 64. The 25-34 group and especially the 35-44 group will increase as percentages of the whole. In other words, the youngest and oldest groups, with the lowest and highest incidence of high-cost illness, will shrink in percentage terms, while the intermediate age groups, with intermediate incidence of high-cost illness, will increase. These trends will tend to cancel out in terms of their impact on the incidence of high-cost illness. See Social Security Administration, United States Population Projections for OASDHI Cost Estimates (Actuarial Study No. 77), Table 12F (1978), and Social Security Administration, Population Projections, 1981 (Actuarial Study No. 85), Table 20C (1981).

TABLE 9. PERCENT OF TOTAL MEDICAL EXPENSES ATTRIBUTABLE TO FAMILIES WITH THE HIGHEST EXPENSES, 1974 AND 1978

Families, ranked by expenses	1974	1978
Top 25 Percent	91	91
Top 20 Percent	85	86
Top 10 Percent	65	67
Top 5 Percent	47	49
Top 1 Percent	20	22

While the proportion of medical expenses attributable to the families with the largest expenses has been growing only slowly in the population groups considered, its growth over the long term could produce a striking increase in the concentration of medical resources on high-cost families. The change would be most marked among the top 1 percent of all families but would be sizable among other high-cost families as well. For example, if these trends continued, the 1 percent of families with the highest expenses--who accounted for 22 percent of expenses in 1978--would account for perhaps 35 percent of expenses by the end of the century. The top 5 percent, who accounted for just under half of all expenses in 1978, would account for 60 percent by that time. This would represent a major reallocation of medical resources.

CHANGES IN THE PROPORTION OF FAMILIES EXCEEDING CATASTROPHIC THRESHOLDS

In this section, three approaches are taken in assessing changes in the proportion of families exceeding catastrophic thresholds. The first, and simplest, approach leaves the thresholds unindexed--that is, constant, in nominal dollars. The second approach indexes the thresholds to keep pace with changes in median family income. Indexing of this sort, although perhaps informal, could be included in some health insurance plans. The final approach adjusts each year's expenses to a constant (1982)

average. This approach assesses the extent to which there is growth in the incidence of high-cost illness beyond the growth caused by increasing average medical expenses.

The relationship between these three approaches--a rapid rise in high-cost illness when thresholds are left unindexed, a relatively slight rise if thresholds are indexed to average medical expenses, and an intermediate rise if thresholds are indexed to median family income--is illustrated in Figure 3. This Figure charts the percentage increase in the incidence of high-cost illness between 1974 and 1978 using a single threshold ($10,000 in 1974 dollars) and all three indexing approaches. More detail on the effects of the three indexing approaches follows.

Increases in High-Cost Illness in Nominal Dollars

If the effects of demographic changes are removed, but expenses and thresholds are left in current (uninflated) dollars, the incidence of high-cost illness rose sharply from 1974 through 1978. Moreover, the higher the threshold used to define high-cost illness, the more marked was the rise in incidence (see Table 10). The proportion of families exceeding a $3,000 threshold increased 138 percent (24 percent a year), from about 2 percent of all families in 1974 to nearly 6 percent of all families in 1978. The proportion of families exceeding a $5,000 threshold increased 189 percent (30 percent per year), and the proportion exceeding $10,000 increased 236 percent (35 percent per year). At these rates, the percentage of families exceeding a $3,000 threshold doubles in about three and a quarter years, and the percentage exceeding $10,000 doubles in less than two and a half years.[2]

Increasing Incomes

For the average family, the increase in high-cost illness described in the previous section was partly offset by increasing family incomes. During the period covered by the study, median family income increased by 37 percent (about 8 percent per year).

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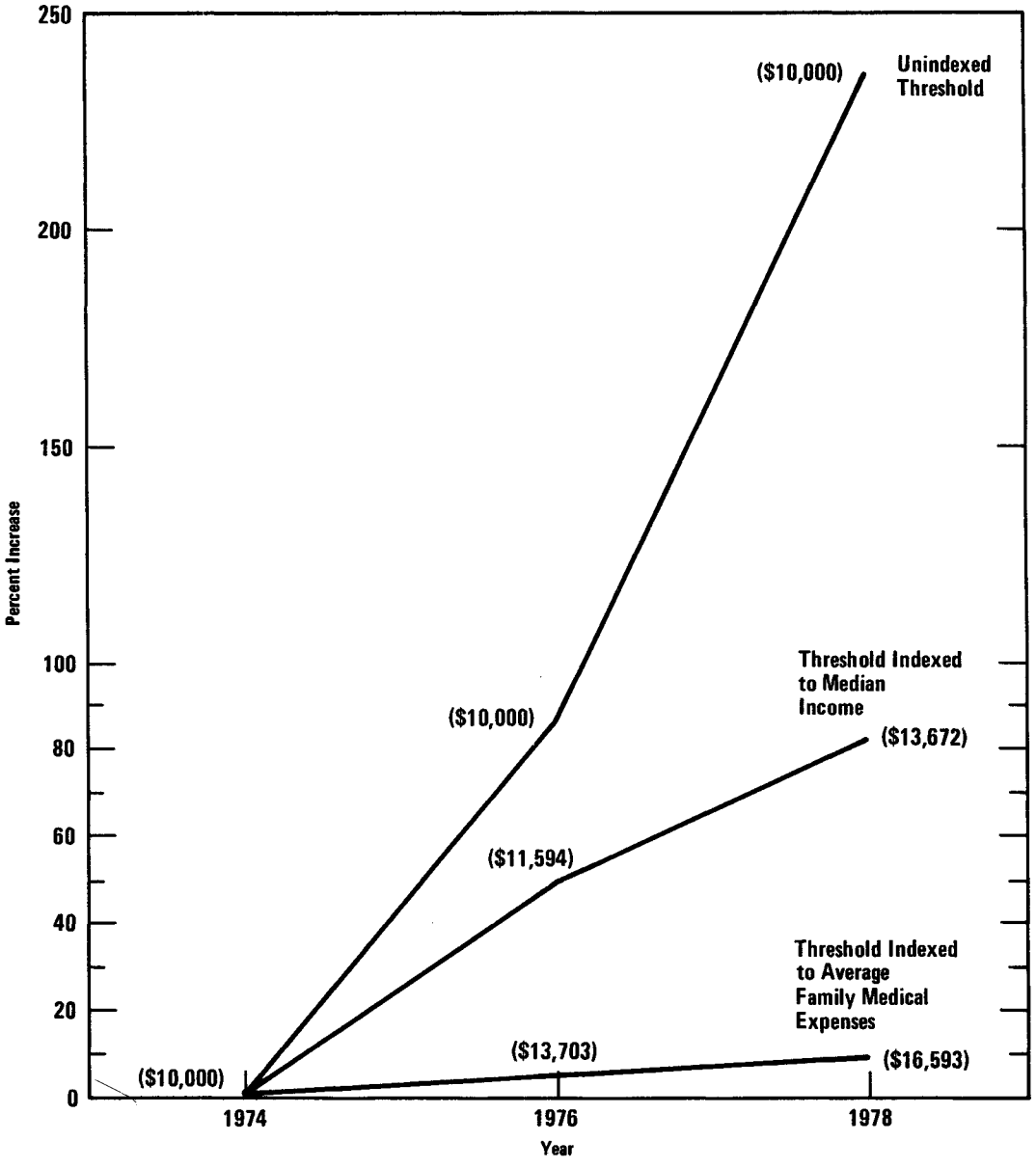
2. The $20,000 threshold is not discussed here because the small number of families exceeding that level, especially in 1974 and 1975, makes an estimate of incidence above that level unreliable.

Figure 3.

Illustrative Percent Increases in the Incidence of High-Cost Illness, Using Unindexed and Indexed $10,000 Thresholds



NOTE: Initial threshold values are $10,000, in 1974 dollars. All threshold values (in parentheses) are expressed in current (nominal) dollars.

TABLE 10. PERCENT OF FAMILIES EXCEEDING CATASTROPHIC THRESHOLDS, HOLDING DEMOGRAPHIC FACTORS CONSTANT

Threshold	1974	1975	1976	1977	1978	Percent Change, 1974-1978
$ 3,000	2.34	3.11	4.01	5.08	5.58	138
5,000	0.84	1.17	1.62	2.01	2.43	189
10,000	0.22	0.29	0.41	0.60	0.74	236
20,000	0.04[a]/	0.03[a]/	0.10	0.12	0.15	275[a]/

NOTE: All values in current (nominal) dollars.

a. Unreliable estimates because of small groups above the threshold.

Adjusting the catastrophic thresholds to keep pace with median income markedly reduced the growth in high-cost illness (see Table 11 and Figure 4; compare with Table 10). Nonetheless, the growth in the incidence of high-cost illness remained substantial. From 1974 through 1978, the proportion of families with expenses above the lowest threshold ($3,000 in 1974, rising to about $4,100 in 1978) increased about 48 percent, or 10 percent per year. The proportion with expenses above a higher threshold ($10,000 in 1974, rising to $13,700 in 1978) increased 82 percent, or 16 percent per year.

Increases in High-Cost Illness Relative to Average Medical Expenses

In recent years, average expenditures for medical care have increased substantially more rapidly than either median income or prices in general. From 1974 through 1978, average expenses for covered services in the sample used here increased 66 percent (13.5 percent per year), when the demographic composition of the sample was held constant. This compares to a 32 percent change in the Consumer Price Index and a 37 percent increase in median family income. This rapid rise in medical expenditures will increase

Figure 4.

Percent of Families Exceeding Catastrophic Thresholds, Holding Median Family Income and Demographic Factors Constant, by Threshold